# Publications WH Steyn (last 7 years)

**Research Gate Score = 20.56**
**Google Scholar Citations = 867, h-index = 16**

**Papers at Conferences/Symposia:**

1. *"An Attitude Control System for SumbandilaSAT an Earth Observation Satellite"*, WH Steyn, The 4S (Small Satellite Systems and Services) Symposium, ESA Proceedings SP-660, Rhodes Greece, 26-30 May 2008.

2. *"Construction of an Image Quality Assesment Model for use On Board an LEO Satellite"*, IvZ Marais, WH Steyn & JA du Preez, IEEE International Geoscience & Remote Sensing Symposium Proceedings (IGARSS), Vol.2, Paper 1023, pp. 1068-1071, Boston USA, 6-11 July 2008.

3. *"Noise Estimation Algorithms for Onboard Image Quality Assessment"*, IvZ Marais & WH Steyn, Paper 2 in Session T2, International Conference on Space Technology, Thessaloniki Greece, 24-26 Aug 2009.

4. *"Onboard Image Quality Assessment for a Small Low Earth Orbit Satellite"*, IvZ Marais, WH Steyn & JA du Preez, Paper IAA B7-0602, 7th IAA Symposium on Small Satellites for Earth Observation, Berlin Germany, 4-8 May 2009.

5. *"In-Orbit AODCS Performance of SumbandilaSAT an Earth Observation Satellite for South Africa"*, WH Steyn, Paper IAC-10.B4.6A.4, 61st International Astronautical Congress, Prague Czech Republic, 27 Sept – 1 Oct 2010.

6. *"Cubesat Solar Sail Attitude Determination and Control System Hardware Design and Orbital Analysis"*, V Lappas et.al & WH Steyn, 2010 AIAA Guidance, Navigation, and Control Conference, Toronto Canada, Paper AIAA-2010-8135, 2-5 Aug 2010.

7. *"Attitude Control Actuators, Sensors and Algorithms for a Solar Sail Cubesat"*, WH Steyn, Paper IAC-11.B4.6B.6, 62nd International Astronautical Congress, Cape Town South Africa, 3-7 Oct 2011.

8. *"Design of an Aerodynamic Attitude Control System for a CubeSat"*, J Auret & WH Steyn, Paper IAC-11.E2.2.3, 62nd International Astronautical Congress, Cape Town South Africa, 3-7 Oct 2011.

9. *"Modular Simulation and Visualisation Application for Satellite Attitude Control"*, L Visagie, WH Steyn & V Lappas, Paper IAC-11-C1.6.1, 62nd International Astronautical Congress, Cape Town South Africa, 3-7 Oct 2011.

10. *"Implementation and Evaluation of Low Cost Fault Tolerant Techniques for Nano/Pico-Satellite Applications"*, PJ Botma, WH Steyn & A Barnard, 5th UN/Japan Nanosatellite Symposium, Nagoya Japan, 10-13 Oct 2012.

11. *"Spinning Solar Sail in an Earth-Centred Orbit"*, HW Jordaan & WH Steyn, 5th UN/Japan Nanosatellite Symposium, Nagoya Japan, 10-13 Oct 2012.

12. *"Advanced control with fundamental and data-based modeling for falling film evaporators"*, A Haasbroek, WH Steyn & L Auret, 2013 IEEE International Conference on Industrial Technology, Cape Town, 25-28 Feb 2013, page 46-51.

13. *"Development of a Robust, Low-Cost 'CubeStar' Sensor"*, A Erlank & WH Steyn, 5th European CubeSat Symposium, Brussels Belgium, 3-5 June 2013.

14. *"The Attitude Control of a Tri-Spin Solar Sail Satellite"*, HW Jordaan & WH Steyn, 3rd International Symposium on Solar Sailing, Glasgow Scotland, 11-13 June 2013.

15. *"Current and Future Small Satellite Projects in South Africa"*, WH Steyn, R van Zyl, M Inggs & PJ Cilliers, IEEE International Geoscience and Remote Sensing Symposium, Melbourne Australia, 21-26 July 2013.

16. *"Low Cost Fault Tolerant Techniques for Nano/Pico-Satellite Applications"*, PJ Botma, WH Steyn & A Barnard, IEEE Africon 2013 Conference, Mauritius, 9-12 Sept 2013.

17. *"A comparison of control techniques for dairy falling film evaporators"*, A Haasbroek, L Auret, WH Steyn, 10th IFAC International Symposium on Dynamics and Control of Process Systems, DYCOPS 2013, Mumbai India, 18-20 Dec 2013.

18. *"Attitude Manoeuvres of a Tri-Spin Solar Sail Satellite"*, HW Jordaan & WH Steyn, SACAC Control Systems Day, University of Cape Town, 27 Nov 2013.

19. *"An Attitude Control System for the Deployment and Stabilisation of a Tethered Dual CubeSat Mission"*, M-A Kearney & WH Steyn, Paper 215 accepted for 19th IFAC World Congress, Cape Town, 24-29 Aug 2014.

20. *"An Attitude Control System for ZA-AeroSat subject to significant Aerodynamic Disturbances"*, WH Steyn & M-A Kearney, Paper 128 accepted for 19th IFAC World Congress, Cape Town, 24-29 Aug 2014.

21. *"Arcminute Attitude Estimation for CubeSats with Novel Nano Star Tracker"*, A Erlank & WH Steyn, Paper 267 accepted for 19th IFAC World Congress, Cape Town, 24-29 Aug 2014.

22. *"ZA-AeroSat: A QB50 CubeSat Demonstrator for Multidisciplinary Technology and Scientific Research"*, M-A Kearney & WH Steyn, 6th European CubeSat Symposium, Estavayer-le-Lac, Switzerland, 14-16 Oct 2014.

23. *"QB50 Precursor ADCS Flight Results"*, LVisagie, V Lappas & WH Steyn, 6th European CubeSat Symposium, Estavayer-le-Lac, Switzerland, 14-16 Oct 2014.

24. *"Hyperspectral Imaging with Nanosats"*, M Jacobs, S Mostert, H Burger, WH Steyn, R Merton, Paper IAC-14-B1.2.4, 65th International Astronautical Congress, Toronto Canada, 29 Sept – 3 Oct 2014. Proceedings ISSN 1995-6258.

25. *"Space Strategies for Developing Countries (A South African Example)"*, Plenary invited presentation by WH Steyn, 7th International Conference on Recent Advances in Space Technologies RAST 2015, 16-19 June 2015, Istanbul Turkey. Plenary Session-2.

26. *"Hints on how to Design a Robust and Reliable ADCS for QB50 CubeSats"*, WH Steyn & L Visagie, 7th European CubeSat Symposium, Liege, Belgium 14-16 September 2015.

27. *"Development of a Dual Gimbal Control Moment Gyro for Nano-Satellites"*, DG Steyn & WH Steyn, Paper IAC-15.B4.6B.6, 66th International Astronautical Congress, Jerusalem Israel, 12-16 Oct 2015. Proceedings ISSN 1995-6258

28. *"An Active Attitude Control System for a Drag Sail Satellite"*, WH Steyn & HW Jordaan, Paper IAC-15.B4.6A.1, 66th International Astronautical Congress, Jerusalem Israel, 12-16 Oct 2015. Proceedings

29. *"RemoveDebris: An EU Low Cost Demonstration Mission to Test ADR Technologies"*, JL Forshaw, et.al. & WH Steyn, Paper IAC-14.A6.6.3, 66th International Astronautical Congress, Jerusalem Israel, 12-16 Oct 2015. Proceedings ISSN 1995-6258

## Publications in Journals:

1. *"A Dual-Wheel Multi-Mode Spacecraft Actuator for Near-Minimum-Time Large Angle Slew Maneuvers"*, WH Steyn, Online available since Feb 2008, Elsevier & ScienceDirect, Aerospace Science and Technology Journal, Vol.12, pp. 545-554, 2008. (Cited = 2, 2012)

2. *"Kalman Filter Configurations for a Low-cost Loosely Integrated Inertial Navigation System on an Airship"*, J Bijker & WH Steyn, Online available since June 2008, Elsevier & ScienceDirect, Control Engineering Practice Journal, Vol.16, pp. 1509-1518, 2008. (Cited = 25, 2012)

3. *"Sumbandilasat – An operational technology demonstrator"*, S Mostert, WH Steyn, H Burger & H Bosman, Online available since August 2008, Elsevier & ScienceDirect, Acta Astronautica, Vol.63, pp. 1273-1282, 2008. (Cited = 8, 2012)

4. *"An optimal image transform for threshold-based cloud detection using heteroscedastic discriminant analysis"*, I v Z Marais, JA du Preez & WH Steyn, International Journal of Remote Sensing, Vol.32. Issue 6, pp. 1713-1729, 2011. (Cited = 2, 2012)

5. *"Determining Vacuum Arc Thruster Performance using a Cathode Spot Model"*, J Lun, RT Dobson & WH Steyn, AIAA Journal of Propulsion and Power, Vol.26, No.4, July-August 2010, pp.663-672.

6. *"Cubesat Solar Sail 3-Axis Stabilization using Panel Translation and Magnetic Torquing"*, WH Steyn and V Lappas, Online available since Sept 2010, Elsevier & ScienceDirect, Aerospace Science and Technology Journal, Vol.15, pp. 476-485, 2011. (Cited = 2, 2012)

7. *"CubeSail: A low cost CubeSat based solar sail demonstration mission"*, V Lappas, N Adeli, L Visagie, J Fernandez, T Theodorou, WH Steyn & M Perren, Online available since June 2011, Elsevier & Science Direct, Advances in Space Research Journal, Vol.48, Issue 12, pp. 1890-1901, 2011. (Cited = 3, 2012)

8. *"Performance Measurements of a Medium-Current Short-Pulsed Vacuum Arc Thruster"*, J Lun, RT Dobson & WH Steyn, Experimental Techniques, Society for Experimental Mechanics, Vol.38, Issue 3, pp.6-16, May/June 2014.

## 13. Published Book Chapters:

1. *"Medium/large Vehicle Tracking System"*, J Auret, PJ Botma, E Chiyika, DJ de Villiers, E Louw, F Sagouo Minko, GA Mutch, M Roman, R Siebrits, S Smit, I Tadadjeu Sokeng, Book Chapter in: Novel Ideas for Nanosatellite Constellation Missions, IAA Book Series, Vol.1 No.1, 2012, ISBN/EAN IAA: 978-2-917761-18-2. (Auret & Botma as my Master Students wrote 80% of the chapter for an International Student Competition, other students are from CPUT).

2. *"The OuterNet: A novel satellite communication relay constellation"*, M-A Kearney, PJ Botma, J Gerber, E Thesnaar, F Nolte, A Erlank, C Groenewald, A Barnard, Book Chapter in: Innovative Ideas for Micro/Nano-Satellite Missions, IAA Book Series,Vol.1, No.1, 2013, ISBN/EAN IAA: 978-2-917761-28-1. (Kearney, Botma, Gerber, Erlank & Groenewald were my Master Students in an International Student Competition)

3.  *"The Attitude Control of a Tri-Spin Solar Sail Satellite"*, HW Jordaan & WH Steyn,
    Book Chapter in: Advances in Solar Sailing, Publisher Springer Praxis Books 2014,
    pp.755-769,  ISBN: 978-3-642-34906-5

4.  *"A Nano-Satellite Constellation for Tracking and Monitoring Endangered Wildlife in
    Developing Countries"*, JH le Roux, A Heunis, G Janse van Vuuren, A Barnard, W
    Jordaan, D Steyn, N Rossouw, M Bin Othman, N Calitz, M Junaid & C Groenewald,
    Book Chapter in: Inventive Ideas for Micro/Nano-Satellites The MIC3 Report, IAA Book Series, Vol.1
    No.5, 2015, ISBN/EAN IAA: 978-2-917761-38-0,  pp.37-49. (All authors except JH le Roux were/are
    my Masters or PhD students for an International Student Competition)